OPENING AND CLOSING DATES OF RIVER-NAVIGATION IN THE UNITED STATES

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In the earliest settlements, streams were used as avenues of communication and transportation and in the winter the ice was used as a bridge for all kinds of traffic. As a consequence, the opening and closing of the river to navigation was watched closely and records were kept by public-spirited men voluntarily dating back at least to 1789. Beginning in 1871, records were kept by the Signal Corps of the United States Army, and later by the Weather Bureau.

Certain streams have been canalized in order to maintain navigation even during periods when the river stages ordinarily would be too low for boat traffic. However, in the colder parts of the country, river-navigation is suspended when the river becomes obstructed by a solid sheet of ice, or when floating ice becomes heavy enough to present a hazard, and it is not resumed until the river is again free of ice.

In the table below is given a summary of the closing and opening dates of river-navigation, based on the aforementioned records. These records represent in some cases the actual freezing and breaking of the ice in the rivers, and in other cases, the actual date of the first and last boat that traversed the stream. However, the two are closely related and no distinction is made in the summary.

Shipman [1] has shown that at Davenport, Iowa, the 3-day average temperature, on and before the closing date, is 13.1° and likewise the 3-day average temperature, on and before the opening date, is 39.7°. He has also plotted the average temperature at Davenport, December to March, against the length of the closed season. These points follow rather closely a line starting at 39.7° (the temperature at which the river opens), running through 27.5° (the normal temperature for the 4 months) at the point of average length of the closed season, and then extending down to 13.1° (the temperature at which the river closes) at the maximum length of closed season observed. This shows that temperature is the main factor in the length of the closed season. Shipman points out that other factors such as the river-stage and fluctuations of the stage have a small influence.

As shown in the accompanying table, the average length of the closed season varies from 127 days at Bismarck, N. Dak., to 49 days at Columbus, Ohio. The longest closed season of record occurred at Omaha, Nebr., with a total of 157 days in 1874–75. Several of the places show open seasons during one or more winters. At Bismarck, the shortest season of record is 90 days and the longest 151 days.

Trenton, N. J., at the head of navigation in the Delaware River, which is not shown in the table, is closed for at least a few days almost every year. Definite dates are not available for all years; however, for certain unusually cold seasons, navigation was suspended as follows:

Dec. 29, 1917, to Feb. 14, 1918.
Jan. 3, 1920, to Mar. 10, 1920.
Jan. 28, 1934, to Mar. 7, 1934.
Jan. 20, 1936, to Mar. 9, 1936.
Dec. 28, 1939, to Feb. 15, 1940.

[1] Shipman, T. G., Ice Conditions on the Mississippi River at Davenport, Iowa: Am. Geophys. Union Trans., 1938, pp. 590–594.

Summary of closing and opening dates of river navigation in the United States

Station	River	Years of record	Closing date			Opening date			Period of suspended navigation				
			Average	Earliest	Latest	Average	Earliest	Latest	Average, days	Maximum		Minimum	
										Days	Season	Days	Season
Albany, N. Y.	Hudson	[1] 1789–1942	Dec. 19	Nov. 13, 1819	Feb. 10, 1934	Mar. 20	Feb. 4, 1842	Apr. 14, 1873 Apr. 14, 1920	91	136	1842–43	0	1931–33, 1934–35, 1936–37.
Hartford, Conn.	Connecticut	[2] 1857–1930	Dec. 23	Nov. 22, 1880	Feb. 14, 1923	Mar. 10	Jan. 23, 1880	Apr. 27, 1920	77	122	1871–72 1919–20	0	1920–21, 1923–26.
Columbus, Ohio	Scioto	1898–1912 1917–1930	Dec. 26	Nov. 28, 1903	Feb. 6, 1924	Feb. 13	Dec. 29, 1910	Mar. 11, 1901	49	87	1903–4	4	1908–9.
Peoria, Ill.	Illinois	1834–1851 1856–1930	Dec. 16	Nov. 13, 1842	Feb. 7, 1914	Feb. 23	Jan. 1, 1836 Jan. 1, 1845 Jan. 1, 1848	Mar. 30, 1901 Mar. 30, 1912	69	126	1842–43	0	1877–78, 1889–90.
St. Paul, Minn.	Mississippi	1866–1869 1872–1942	Dec. 7	Nov. 12, 1893 Nov. 12, 1911	Jan. 30, 1932	Mar. 19	Feb. 2, 1931	Apr. 14, 1872	102	142	1875–76	45	1931–32.
LaCrosse, Wis.	do	1874–1942	Dec. 11	Nov. 19, 1880	Jan. 19, 1932	Mar. 21	Feb. 3, 1931	Apr. 12, 1899	100	138	1880–81	62	1881–82.
Dubuque, Iowa	do	1874–1942	Dec. 4	Nov. 13, 1896	Jan. 15, 1905	Mar. 20	Feb. 17, 1921	Apr. 12, 1881	106	147	1880–81	61	1920–21.
Davenport, Iowa	do	1841–1942	Dec. 25	Nov. 7, 1842	Feb. 4, 1845 Feb. 4, 1890	Mar. 3	Jan. 7, 1880	Apr. 10, 1843	68	154	1842–43	0	1857–58, 1862–63, 1877–78, 1881–82, 1905–7, 1931–32.
Keokuk, Iowa	do	1871–1942	Dec. 11	Nov. 17, 1891	Jan. 15, 1874	Mar. 6	Jan. 19, 1874	Mar. 29, 1881	85	121	1874–75	4	1873–74.
Hannibal, Mo.	do	1892–1931	Dec. 25	Nov. 25, 1911	Jan. 31, 1897	Feb. 21	Jan. 19, 1910	Mar. 18, 1912	58	114	1911–12	0	1913–14.
Bismarck, N. Dak.	Missouri	1880–1942	Nov. 25	Oct. 27, 1919	Dec. 27, 1939	Apr. 1	Mar. 13, 1910	Apr. 16, 1940	127	151	1882–83 1919–20	90	1925–26.
Sioux City, Iowa	do	1889–1942	Dec. 19	Nov. 12, 1896 Nov. 12, 1919	Feb. 8, 1939	Mar. 6	Feb. 5, 1928	Apr. 4, 1899	77	128	1896–97	0	1930–32, 1939–40.
Omaha, Nebr.	do	1874–1889 1894–1942	Dec. 22	Oct. 23, 1874	Feb. 24, 1901	Mar. 4	Jan. 12, 1921	Mar. 31, 1876	72	157	1874–75	0	1940–41.
Kansas City, Mo.	do	1874–1942	Dec. 20	Nov. 14, 1875	Feb. 1, 1908	Feb. 24	Jan. 8, 1880	Mar. 27, 1912	66	124	1875–76	0	1890–92, 1933–35, 1936–37.

[1] Closing dates available beginning in 1789, opening dates in 1813 and from 1817 to 1942.
[2] Opening dates available since 1838.